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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/662,679	09/15/2000	Fernando C. M. Martins	10559/195001/P8367	1908

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EXAMINER
BECKER, SHAWN M

ART UNIT	PAPER NUMBER
2173	12

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Application No.	Applicant(s)
09/662,679	MARTINS, FERNANDO C. M.
Examiner	Art Unit
Shawn M. Becker	2173

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,7-22,26 and 28-30* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7-22,26 and 28-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
   a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4)☐ Interview Summary (PTO-413) Paper No(s). _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

DETAILED ACTION

This action is in response to communication filed 11/20/03.

Drawings

1.   The drawings were received on 11/7/03. These drawings are accepted.

Specification

2.   The objection to the specification for lacking a "Summary of the Invention" is

maintained, because the application fails to be in accordance with the accepted guidelines of

current U.S. practice. Applicant is directed to 37 CFR 1.73, which states, "A brief summary of

the invention indicating its nature and substance, which may include a statement of the object of

the invention, should precede the detailed description..." It is noted that the brief summary

should be inserted prior to the detailed description. Applicant is directed to MPEP § 608.01(d).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   Claims 1-3, 7-22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Patent No. 6,227,968 to Suzuki et al. (hereinafter Suzuki) and U.S. Patent No. 6,256,033 to

Nguyen (hereinafter Nguyen).

Referring to claims 1 and 26, Suzuki teaches a method and computer program product that receives audio data having a beat and forming beat data based on the audio data (col. 7, lines 24-34). Suzuki teaches determining a gesture window within which a gesture (dance move) should occur, based on a specified time window relative to the beat data, and Suzuki plays the audio data and obtains gesture data during a time that the audio data is being played. See col. 7, lines 35-50. Also, see col. 1, lines 9-13, which describes how the player is to perform the action in time with the rhythm.

Suzuki segments the gesture data according to the specified time window (time between beats), and Suzuki automatically determines information related to a gesture occurring within the specified timing window (i.e. if the appropriate dance move/gesture occurred within the timing window for score keeping). See col. 7, lines 25-55 and col. 10, line 30 - col. 11, line 37.

Suzuki does not teach that the gesture data is obtained through video data, wherein the video data is segmented to create a video clip of time including specified time window.

However, Nguyen discloses a method and a computer program product for recognizing gestures contained in video data that segments video data to create a video clip based on timing data that indicates a specified timing window within which a gesture will occur. See col. 2, lines 23-25, which states, "The frame captures the person in the action of performing the gesture at one moment in time" and col. 2, lines 28-34, which states, "These sequence of frame data sets taken over a period of time..." The method determines information related to a gesture occurring in the video clip only at the specified timing. See col. 3, lines 11-14, which describes "determining particular coordinates of the subject at a particular time". (emphasis added).

It would have been obvious to one of ordinary skill in the art to substitute the gesture recognition method (step-on base of a floor panel) in the dance game of Suzuki with the video gesture recognition method of Nguyen, such that the video data is segmented into video clips of specified timing according to beat data as supported by the beat timing window of Suzuki, because the step-on base of Suzuki only captures the movements of the player's feet, and does not recognize the movements of the rest of the body as intended in Suzuki (col. 1, lines 44-51), wherein the video gesture recognition method of Nguyen captures the movements of the entire body.

Referring to claims 14, Suzuki teaches a system with an audio part that receives audio data having a beat and forming beat data based on the audio data (col. 7, lines 24-34). Suzuki teaches determining a gesture window within which a gesture (dance move) should occur, based on a specified time window relative to the beat data, and Suzuki plays the audio data and obtains gesture data during a time that the audio data is being played. See col. 7, lines 35-50. Also, see col. 1, lines 9-13, which describes how the player is to perform the action in time with the rhythm.

Suzuki segments the gesture data according to the specified time window (time between beats), and Suzuki automatically determines information related to a gesture occurring within the specified timing window (i.e. if the appropriate dance move/gesture occurred within the timing window for score keeping). See col. 7, lines 25-55 and col. 10, line 30 - col. 11, line 37.

Suzuki does not teach that the gesture data is obtained through video data, wherein the video data is segmented to create a video clip of time including specified time window.

However, Nguyen discloses a system with a processor (Fig. 1, 102) for recognizing gestures contained in video data that has a temporal segmentor that segments video data to create a video clip based on timing data that indicates a specified timing window within which a gesture will occur. See col. 2, lines 23-25, which states, "The frame captures the person in the action of performing the gesture at one moment in time" and col. 2, lines 28-34, which states, "These sequence of frame data sets taken over a period of time..." The method determines information related to a gesture occurring in the video clip only at the specified timing. See col. 3, lines 11-14, which describes "determining particular coordinates of the subject at a particular time". (emphasis added). Nguyen also discloses a recognition engine, in communication with the temporal segmentor, to determine if the video clip contains a predefined gesture, only within a specified timing window. See col. 1, lines 17-23 and col. 3, lines 11-14.

It would have been obvious to one of ordinary skill in the art to substitute the gesture recognition system (step-on base of a floor panel) in the dance game of Suzuki with the video gesture recognition system of Nguyen, such that the video data is segmented into video clips of specified timing according to beat data as supported by the beat timing window of Suzuki, because the step-on base of Suzuki only captures the movements of the player's feet, and does not recognize the movements of the rest of the body as intended in Suzuki (col. 1, lines 44-51), wherein the video gesture recognition system of Nguyen captures the movements of the entire body.

Referring to claims 2-3, the combination of Suzuki and Nguyen, *supra*, describes how

Hidden Markov Models are used to determine a probability that each of a plurality of predefined

gestures are performed within a timing window. See col. 5, lines 13-45 of Nguyen.

Referring to claim 7, 17-18, and 21, the dance game of Suzuki teaches displaying a target

gesture to be performed by the subject. The target gesture is a dance move. See col. 12, lines

57-61. The target gesture is displayed on the display subsystem (monitor; col. 12, line 59).

Referring to claims 8-10, the combination of Suzuki and Nguyen, *supra*, teaches each

video clip contains video frames (Nguyen at col. 7, line 22), and in each frame, the moving

regions are identified (Nguyen at col. 8, lines 58-61). Feature vectors (array of key points) are

generated for each video frame of the video clip. See Nguyen at col. 8, line 49 – col. 9, line 46,

which describes how significant positional coordinates are extracted from each frame to make a

comparison to the known gesture coordinates.

Referring to claims 11-12 and 19-20, the method of Suzuki and Nguyen, *supra*, generates

and displays a score based on whether a target movement (gesture) was performed. See Suzuki

at col. 11, lines 37-41. The object of the Suzuki dance game is to achieve the highest score by

performing the appropriate gestures.

Referring to claims 13 and 22, the combination of Suzuki and Nguyen, *supra*, discloses

that the recognition engine is configured to recognize predefined gestures and that determining if

the video clip contains a target gesture includes generating a gesture probability vector (array)

having a plurality of elements, each element being associated with one of a predefined gestures

and representing a probability that the video clip contains each of the associated predefined gestures. See col. 11, lines 30-49 and col. 10, lines 18-37.

Referring to claim 15, the recognition engine of Suzuki and Nguyen, *supra*, includes a plurality of Hidden Markov Models. See Nguyen at col. 5, lines 13-18.

Referring to claim 16, the system of Suzuki and Nguyen, *supra*, includes a video source (Nguyen at Fig. 2, 200), in communication with the temporal segmentor, to provide the video data to the temporal segmentor.

5.   Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen and Suzuki.

Referring to claim 28, Nguyen teaches an A/V processing system that includes a video source (camera; Fig. 2, 200). Nguyen discloses a computer program product for recognizing gestures contained in video data, comprising instruction operable to cause a programmable processor, in communication with the video source to segment the video clip and automatically determine if the video clip contains a predefined gesture. See col. 1, lines 17-23.

Nguyen determines a gesture window within which a gesture should occur. See col. 2, lines 23-25, which states, "The frame captures the person in the action of performing the gesture at one moment in time" and col. 2, lines 28-34, which states, "These sequence of frame data sets taken over a period of time..." The method determines information related to a gesture occurring in the video clip only at the specified timing. See col. 3, lines 11-14, which describes "determining particular coordinates of the subject at a particular time". (emphasis added).

Nguyen does not explicitly teach an audio source to provide audio data having a beat

from which beat data is extracted, such that the a specified time window of the segments are

based on the beat data or obtaining the video data during a time that the audio signal is being

produced. However, Suzuki teaches a dance game, which is intended to make the player use his

entire body to create rhythm sensations (col. 1, lines 47-50). The dance game of Suzuki teaches

that audio data is received and the beat data is extracted to create a specified timing window (col.

7, lines 24-34). Suzuki determines if a predefined gesture (dance move) is performed by

detecting dance steps on a step-on base only within a specified timing window related to the beat

data. For example, see col. 14, lines 6-18. It would have been obvious to one of ordinary skill in

the art at the time of the invention to modify the gesture recognition method of Nguyen to be

used in the dance game of Suzuki, such that the video data is obtained during a time that the

audio data is played and the specified timing window for seeing if a gesture occurred is related to

beat data extracted from audio data as supported by Suzuki. One would have been so motivated

in order to compare all movements of a player (i.e. arms) to an appropriate dance move because

the step-on base of Suzuki only captures the movements of the player's feet, and does not

recognize the movements of the rest of the body as intended in Suzuki.

Referring to claim 29, Nguyen teaches the computer program product includes instruction

operable to cause the programmable processor to perform a Hidden Markov Model process to

determine if the video clip contains the predefined gesture. See col. 5, lines 13-18.

Referring to claim 30, Nguyen discloses a display (monitor; Fig. 2, 208) to display

information based on whether the video clip contains the predefined gesture. See col. 6, lines

36-44, which describes how figures on the display can be augmented if the gesture is recognized as a predefined gesture.

Response to Arguments

6.   Applicant's arguments filed 11/20/03 have been fully considered but they are not persuasive.

7.   In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant argues that nothing in the dance game of Suzuki teaches video acquisition and that Nguyen teaches nothing about a dance game. However, Suzuki teaches that the dance game uses a form of gesture recognition, and Nguyen teaches a more sophisticated form of gesture recognition available at the time of the present invention. One of ordinary skill in the art would have readily recognized the advantage of the video gesture recognition of Nguyen over the step-on base gesture recognition of Suzuki at the time of the invention. Therefore, one of ordinary skill in the art would have been motivated to substitute the gesture recognition (step-on base) of Suzuki with the more sophisticated gesture recognition of Nguyen for a more accurate capture of dance moves (i.e. capturing the entire body instead of just the feet).

Applicant argues that Suzuki does not teach analyzing information automatically within the video clip. However, Nguyen teaches analyzing the video clip, and Suzuki teaches looking for a gesture within a specified timing window (i.e. according to a rhythm). Therefore, the combination of Suzuki and Nguyen, described above, teach each limitation claimed.

Applicant argues with respect to claims 10-11 and 22, that Nguyen does not teach a feature vector or a gesture probability vector. See Nguyen at col. 8, line 49 – col. 9, line 46, which describes how significant positional coordinates are extracted from each frame to make a comparison to the known gesture coordinates, wherein the gesture coordinates are stored in an array. Therefore, the array of key points makes up the feature vector. Col. 11, lines 30-49 and col. 10, lines 18-37, describes a probability array (vector).
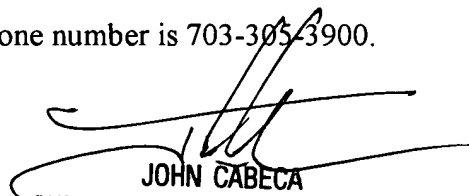
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn M. Becker whose telephone number is 703-305-7756. The examiner can normally be reached on M-Th 8:00 - 5:30 and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Cabeca can be reached on 703-305-3116. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

JOHN CABECA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

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